



**Report**

## **Integrated Gas**

# **BEETALOO BASIN AMUNGEE NW-1 STIMULATION EMP**

## **Annual Environmental Performance Report**

### **THE THREE WHATS**

**What can go wrong?  
What could cause it to go  
wrong?  
What can I do to prevent it?**

# Beetaloo Basin Amungee NW-1 Stimulation EMP AEPR


## Document Details

Document title	Amungee NW-1 Stimulation Program Annual Environmental Performance Report
EMPs Covered	2016 Hydraulic Fracture stimulation and Well Testing EP: Amungee Nw-1 and Beetaloo W-1 or nutwood Downs SW-1 EP
Permit	EP 98
Interest holder details	Origin Energy B2 Pty Ltd ABN 42 105 431 525• Level 28, 180 Ann Street, Brisbane QLD, 4000 Falcon Oil & Gas Australia Limited ABN 53 132 857 008
Operator details	Origin Energy B2 Pty Ltd ABN 42 105 431 525
Approved by	Tracey Boyes- General Management Beetaloo and Growth Assets
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Rev	Date	Reason for issue	Reviewer/s	Consolidator	Approver
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## Signature and certification

I hereby declare that the information provided in this annual environment performance report and accompanying documents is to the best of my/our knowledge, true and correct.	
Signature	
Name	Tracey Boyes
Position	General Management Beetaloo and Growth Assets
Date	15/01/2021

# Beetaloo Basin Amungee NW-1 Stimulation EMP AEPR

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# Beetaloo Basin Amungee NW-1 Stimulation EMP AEPR

## 1. Introduction

The Petroleum (Environment) Regulations 2016 (NT) include a requirement<sup>1</sup> for the interest holder to provide a report to the Minister on an annual basis that outlines the environmental performance of regulated activities. The Annual Environment Performance Report (AEPR) must include sufficient information to allow the Minister to assess whether the interest holder has met the environmental outcomes and environmental performance standards included in the approved Environment Management Plan (EMP). The report is to consider information required to be recorded, monitored or reported under the Petroleum (Environment) Regulations 2016 (NT) and any other law in force in the Northern Territory related to conduct of the regulated activity.

This AEPR covers the regulated activities approved under the 2016 Hydraulic Fracture stimulation and Well Testing EP: Amungee Nw-1 and Beetaloo W-1 or nutwood Downs SW-1 EMP.

The AEPR covers the reporting period of 23/08/2019 to the 23/08/2020.

### 1.1 Acronyms and abbreviations

Table 1 summary of acronyms and abbreviations

Acronym	Definition
AAPA	Aboriginal Area Protection Authority
CMS	Compliance management system
COP	Code of Practice: Onshore Petroleum Activities in the Northern Territory
DEPWS	The Department of Environment, Parks and Water Security
DITT	Department of Industry, Innovation and Trade
FTP	File Transfer Protocol
Ha	Hectare
OCIS	Origins Collective Intelligence System used for managing incident data
PER	Petroleum (Environment) Regulations
WBIV	Well barrier integrity verification

### 1.2 Background

The Amungee Nw-1 (also referred to as the Velkerri 98 N1) exploration well was stimulated and well tested in 2016. The well was subsequently suspended in November 2016, with the well used to monitor build up pressure in the formation since this time. The regulated activities that have been assessed under this AEPR are restricted to routine fortnightly site inspection, periodic maintenance and 6 monthly leak detection.

A Location of the regulated activities is provided in Figure 1.

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<sup>1</sup> Petroleum (Environment) Regulations 2016 (NT) sch 1, item 11.

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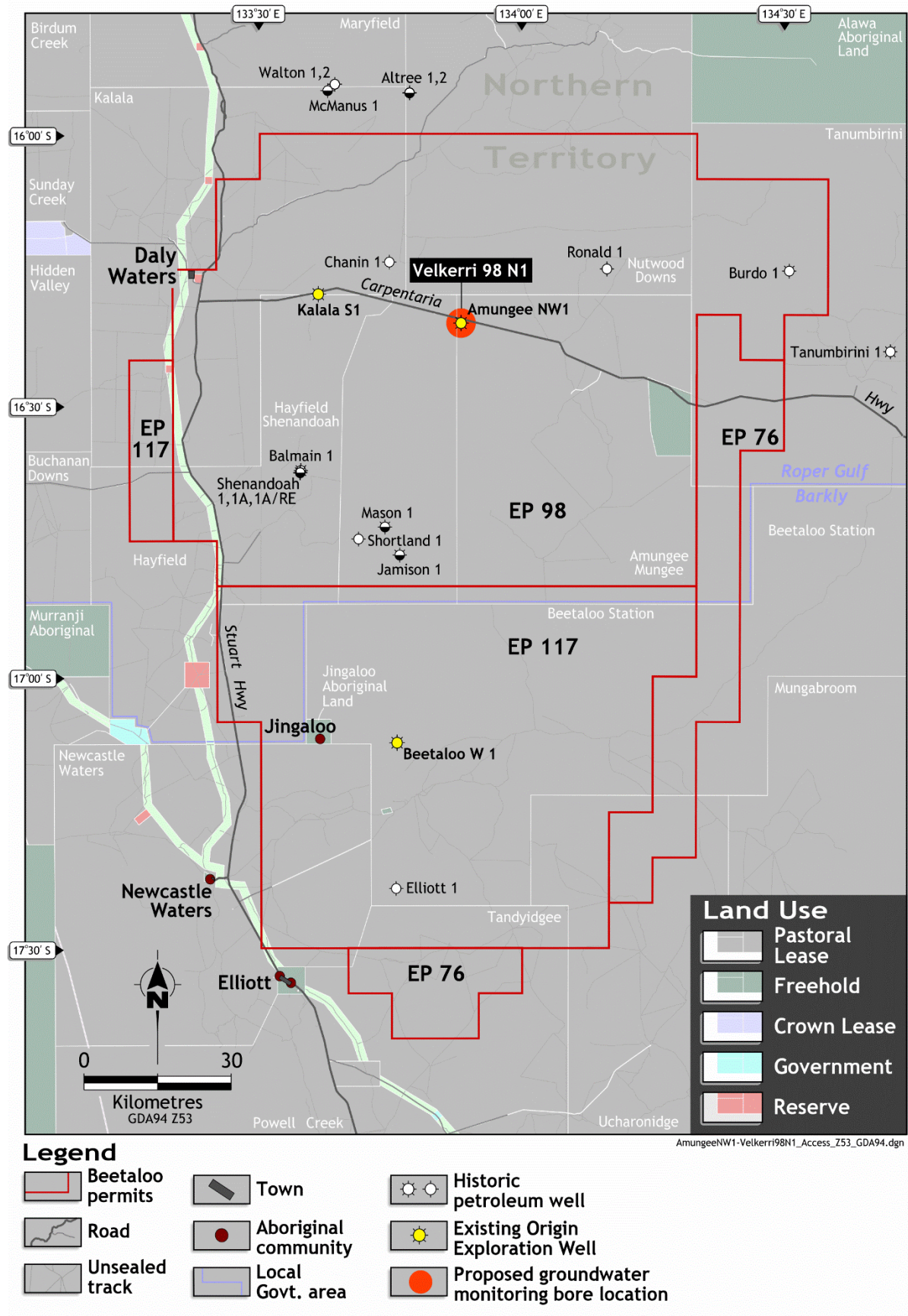


Figure 1 Amungee NW-1 Location

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## 1.3 Contents of Performance Report

This AEPR describes the environmental performance of Origin by evaluation of the following:

1. compliance with Ministerial approval conditions, for each EMP
2. compliance with each environmental outcome and environmental performance standard within the approved EMP's
3. compliance with reporting requirements in accordance with the Code and Regulations
4. all recordable and reportable incidents, including root cause analysis and related corrective actions to prevent re-occurrence
5. findings of all regulatory inspections and audits and related actions to address any findings.

## 1.4 Assessment of compliance

Table 2 shows the compliance status indicators used in this AEPR which have been defined by the Department of Environment, Parks and Water Security (DEPWS).

**Table 2 Compliance Descriptors**

Indicator	Description
Compliant	Compliant with requirement for entire 12-month reporting period
Partially Compliant	Compliant with requirement for most of year, short periods of non-compliance
Not Compliant	Interest holder did not comply with the requirement during the reporting period
Not Applicable	Requirement not applicable during the reporting period

## 1.5 Evidence of compliance

The following sources of evidence are used to demonstrate compliance:

1. internal monitoring of compliance by Origin Energy through:
  - Fortnightly inspections of the lease pad an Amungee Nw-1 well.
  - 6 monthly leak detection completed
  - Routine inspection and maintenance on the exploration wells
2. outcomes from regulatory inspection/s conducted by the Department of Industry, Tourism and Trade (DITT)
3. recordable and reportable incident reports submitted to DEPWS Petroleum Operations
4. reports provided to the Department of Industry, Tourism and Trade (DITT) and other government agencies.

## 2. Demonstration of Compliance

### 2.1 Ministerial Condition compliance

The EMP was approved without Ministerial conditions.

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## 2.2 Environmental outcomes and performance standards

No specific environmental outcomes or performance measures were provided in the EMP. The relevant outcomes and performance standards from the Exploration Environmental Plan, Beetaloo Basin have been used to demonstrate the environmental performance of operations and continual improvement. These are summarised in Table 3.

**Table 3 Environmental outcomes and performance measures**

Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
1	<ul style="list-style-type: none"> <li>To avoid, or minimise and control, soil erosion and discharge of sediment or soil into waterways or established drainage systems</li> <li>To minimise disturbance of soil, vegetation and drainage during site activities</li> </ul>	<ul style="list-style-type: none"> <li>Minimum incidences of erosion and sedimentation occurring</li> </ul>	Compliant	<ul style="list-style-type: none"> <li>Fortnightly inspection of lease pad completed by contractor</li> <li>No material erosion recorded during site inspections or listed in Origin Incident management system.</li> </ul>
2	<ul style="list-style-type: none"> <li>To minimise the creation of dust or air emissions</li> </ul>	<ul style="list-style-type: none"> <li>Prompt remediation of erosion fronts when recorded</li> </ul>	Compliant	<ul style="list-style-type: none"> <li>No material erosion recorded during site inspections or listed in Origin Incident management system.</li> </ul>
3		<ul style="list-style-type: none"> <li>Avoidance of reasonable complaints from leaseholders about road/track conditions and/or erosion on properties.</li> </ul>	Compliant	<ul style="list-style-type: none"> <li>No pastoralist complaints recorded during activity recorded in Origin's incident management system.</li> </ul>
4	<ul style="list-style-type: none"> <li>To manage exploration activities to prevent contamination of groundwater</li> <li>Preserve groundwater quality and quantity for potable and stock supplies.</li> </ul>	<ul style="list-style-type: none"> <li>No long-lasting change in groundwater quantity or quality from base line conditions.</li> </ul>	Compliant	<ul style="list-style-type: none"> <li>Groundwater monitoring results confirm no contamination from activity.</li> <li>Groundwater monitoring data collected from monitoring bores 6 monthly and submitted to DEPWS annually. Last submission to DEPWS was on 29/10/2020.</li> </ul>
5	<ul style="list-style-type: none"> <li>To minimise impacts on soil, surface water groundwater, sensitive habitat and air quality</li> <li>To minimise creation of food sources or habitat for pest species.</li> </ul>	<ul style="list-style-type: none"> <li>The outcomes of waste management practices can be assessed against the performance criteria for</li> </ul>	Compliant	<ul style="list-style-type: none"> <li>No incidents of soil, surface water or groundwater contamination reported in Origin's incident management system</li> </ul>



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Number	Environmental outcomes	Environmental Performance Standard	Compliance	Evidence
	<ul style="list-style-type: none"> <li>To minimise waste generation through reduce, reuse, recycle programs..</li> </ul>	monitoring of soil, surface water and groundwater.		
6	<ul style="list-style-type: none"> <li>To minimise increases in air emissions.</li> <li>To minimise the creation of dust.</li> <li>To minimise the creation of smoke from wildfire or other sources of fire.</li> </ul>	<ul style="list-style-type: none"> <li>The success of minimising dust and other air emissions will be indicated from feedback from pastoralists and other stakeholders. It would be desirable to have a minimum number of complaints regards dust, odour or air emissions.</li> <li>If required, reporting to NPI would also be a good indicator of compliance.</li> </ul>	Compliant	<ul style="list-style-type: none"> <li>No incidents of uncontrolled gas emissions reported in Origin's incident management system</li> <li>6 monthly leak detection on the Amungee Nw-1 well completed in May and November 2020</li> <li>No pastoralist complaints recorded during activity recorded in Origin's incident management system.</li> <li>No incidents regarding bushfires caused by Origin's activities recorded in Origin's incident management system.</li> </ul>
7	<ul style="list-style-type: none"> <li>To manage exploration activities to minimise potential impacts on vegetation</li> <li>To manage exploration activities to prevent potential impacts on significant vegetation communities.</li> </ul>	<ul style="list-style-type: none"> <li>The results of the vegetation monitoring program should be assessed against the density and diversity of surrounding vegetated areas and any pre-disturbance records. Sites that have a comparable density and species diversity can be considered to be successfully rehabilitated.</li> <li>Regrowth of natural vegetation should be visible within a few weeks of the wet season commencing, and the plugged and abandoned drill sites should generally be well covered within six months.</li> </ul>	Not Applicable	<ul style="list-style-type: none"> <li>Rehabilitation of the site has not commenced with future activities on the site anticipated.</li> </ul>



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## 2.3 Mandatory reporting requirements

Table 4 demonstrates Origin Energy's compliance with reporting requirements in the Code of Practice: Onshore Petroleum Activities in the Northern Territory (Code of Practice) and interest holder's compliance with reporting requirements under the Petroleum (Environment) Regulations 2016 (NT) schedule 1, item 11(2), which requires all information required to be recorded, monitored or reported has been provided. Where relevant, Origin Energy has also confirmed that all records, monitoring or required reporting under the Petroleum (Environment) Regulations 2016 (NT)<sup>2</sup> has been provided to DEPWS or the relevant NTG agency.

**Table 4 summary of mandatory reporting requirements**

No#	Reference	Requirement	Compliance Status	Evidence
1	COP A.3.5	Geospatial information depicting areas cleared is to be provided to the Minister.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
2	COP A.3.6 (b)	Weed management plan developed as part of the EMP must provide for ongoing weed monitoring.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
3	COP A.3.7(a)vi	The fire management plan developed as part of the EMP must provide for annual fire mapping to monitor changes to fire frequency in the relevant areas.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
4	COP A.3.9(c) COP A.3.9(e)	The rehabilitation plan developed as part of the EMP requires progressive rehabilitation of significantly disturbed land which is required to commence no longer than 12 months following the cessation of activities on the land. It also requires regular maintenance and annual monitoring of rehabilitated areas.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
5	COP B.4.13.2(c)	As a minimum, the following must be recorded and reported for each stage (where a stage in this context means all fluids pumped at a particular depth interval):	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>

<sup>2</sup> Petroleum (Environment) Regulations 2016 (NT) sch 1, item 11(2).

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No#	Reference	Requirement	Compliance Status	Evidence
		a) total volume of hydraulic fracturing fluid pumped, b) quality of water used (tested for analytes in section C.8 of this Code. Analyses do not need to be repeated if the same water source is used for multiple stages) and typical and maximum concentrations of chemicals or other substances used.		
6	COP B.4.13.2(k)iv	Where venting is the only technically feasible option for managing produced gas, the technical considerations preventing the use of the recovered gas must be recorded and included in the operator's annual report.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
7	COP B.4.14.2(c)	All new barriers or new well operating envelopes must be verified and clearly documented and reported by submission of an updated well barrier integrity validation (WBIV) report to DPIR.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
8	COP B.4.15.2(j)	Complete and accurate records of the entire decommissioning procedure must be kept, with these records submitted as part of the legislative reporting requirements for the decommissioning of petroleum wells.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
9	COP B.4.17.2(d)	Any guidelines published by the Northern Territory Government from time to time relating to reporting and data submission, and groundwater monitoring data standards must be followed.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
10	COP C.3(e)	The components of the wastewater management framework, include: Monitor, manage and report in accordance with the Wastewater Management Plan and Spill Management Plan.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>

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No#	Reference	Requirement	Compliance Status	Evidence
11	COP C.6.1(d)	Wastewater tracking documentation must be reported to the Minister at least annually in accordance with the framework provided in the EMP.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
12	COP C.7.1(d)ii	Wastewater Management Plan must include a program for monitoring and reporting against the effectiveness of the measures for the mitigation of interaction with wildlife, stock and human receptors with wastewater.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
13	COP D.4.3.2(f)	A written report detailing the levels of methane measured, the duration of the unusual readings and the results of the investigation (including remedial actions) must be submitted within one month of the significantly higher-level methane event being detected.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
14	COP D.5.9.2(c)	Emissions from exploration, well construction (including during flowback) and workovers must be measured and reports submitted.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
15	COP D.5.9.3(a)	Where natural gas is vented or flared at a gas processing or other downstream facility, emissions must be estimated and reported.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
17	COP D.6.2(a)	Reports of baseline assessments must be submitted at the conclusion of each field campaign.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- The EMP was approved prior to the COP coming into force.</li> </ul>
18	COP D.6.2(b)	Emissions reporting must be in accordance with Section D.5.6. Emissions associated with venting and flaring as described in Section D.5.9 must be provided separately to the Northern Territory Government in accordance with this Code.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable- No activities have occurred during the reporting period which would trigger this requirement.</li> </ul>
19	PER Reg 14	A current EMP remains in force until the interest holder notifies the Minister the	Compliant	<ul style="list-style-type: none"> <li>Compliant- the EMP is valid until August 2021 with a review and approval to occur before this time.</li> </ul>

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No#	Reference	Requirement	Compliance Status	Evidence
		activity is no longer being carried out and all of the environmental outcomes and obligations under the plan have been met, and the Minister advises the interest holder the notice is accepted and the plan ceases to be in force.		
20	PER Reg 33	DEPWS is notified of reportable incidents within 2 hours of the interest holder becoming aware of the incident, or within 2 hours of the incident occurring.  A written report must be provided within 24 hours if the initial report was made orally.	Compliant	<ul style="list-style-type: none"> <li>No reportable incidents have been recorded.</li> </ul>
21	PER Reg 34	Reports on reportable incidents are to be provided to DEPWS as soon as practicable and within 72 hours of the event occurring.  A final report must be provided to DEPWS within 30 days after remediation/clean-up of the affected area.	Compliant	No reportable incidents have been recorded.
22	PER Reg 35	A written report of all recordable incidents must be provided to DEPWS not later than 15 days after the 90 day reporting period (unless otherwise agreed).	Partial compliance	<p>Quarterly recordable incidents reports were provided as follows:</p> <ul style="list-style-type: none"> <li>Q3 2019 No recordable incidents occurred during reporting period and no written report provided. Incident discussions were included in weekly operations meeting with DEPWS</li> <li>Q4 2019 No recordable incidents occurred during reporting period and no written report provided. Incident discussions were included in weekly operations meeting with DEPWS.</li> <li>Q1 2020 report provided 17/03/2020</li> <li>Q2 2020 report provided 17/06/2020</li> <li>Q3 2020 report provided 15/09/2020</li> </ul>
23	PER Reg 37A	A report about flowback fluid from hydraulic fracturing must be provided to the Minister within 6 months of the flowback occurring.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable to the scope of the AEPR as no hydraulic fracture stimulation or well testing activities completed during the reporting period.</li> </ul>

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No#	Reference	Requirement	Compliance Status	Evidence
24	PER Reg 37B	A report about produced water from hydraulic fracturing must be provided to the Minister within 6 months of the produced water being extracted.	Not Applicable	<ul style="list-style-type: none"> <li>Not Applicable to the scope of this AEPR as no hydraulic fracture stimulation or well testing activities completed during the reporting period.</li> </ul>
25	PER Schedule 1, item 9(2)	Interest holders are required to conduct future engagement with stakeholders, in accordance with the description in the EMP.	Compliant	<ul style="list-style-type: none"> <li>Stakeholder engagement with immediately affected parties is ongoing, with the frequency of the engagement occurring at least quarterly</li> </ul>
26	Schedule 1, item 12	Interest holder must notify the Minister, occupier of the land and owner of the land on which the activity is to be carried out before commencement of activity.	Not Applicable	<ul style="list-style-type: none"> <li>Not applicable- no notification have been required during the reporting period.</li> </ul>
27	Environment Protection Act 2019 (NT) div 8	Duty to notify the NT EPA as soon as practicable but within 24 hours of any incident which occurs which causes or threatens to cause material or significant environmental harm	Compliant	<ul style="list-style-type: none"> <li>No incidents which could cause or threaten to cause material or significant environmental harm occurred during reporting period.</li> </ul>
28	Waste Management and Pollution Control Act 1998 (NT) s 14	Duty to notify the NT EPA as soon as practicable but within 24 hours of any incident which occurs which causes or threatens to cause pollution resulting in material or significant environmental harm	Compliant	<ul style="list-style-type: none"> <li>No incidents which could cause or threaten to cause material or significant environmental harm occurred during reporting period.</li> </ul>

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## 3. Summary of Compliance

### 3.1 Overview of Compliance

Table 5 provides a summary of the results of the compliance assessment against the relevant EMP's.

**Table 5 2016 Hydraulic Fracture stimulation and Well Testing EP: Amungee NW-1 and Beetaloo W-1 or nutwood Downs SW-1 EMP compliance summary**

Compliance Indicator	Number	Percentage
Compliant	12	35%
Partially Compliant	1	3%
Not Compliant	0	0%
Not Applicable	21	62%

### 3.2 Overview of Items Found Not Compliant or Partially Compliant

The following sections describe:

- the specific compliance requirements not met for the reporting period
- an analysis of the possible potential environmental harm or impact to environmental values resulting from non-compliance or partial compliance, using multiple lines of evidence
- a summary of the corrective actions already implemented, and further actions still required, as applicable, to ensure compliance is fully achieved in the future.

#### 3.2.1 Ministerial Approval conditions

No non-compliances with Ministerial conditions were recorded.

#### 3.2.2 Environmental Performance Standards

##### 3.2.2.1 Description

No non-compliances with performance standards were identified.

#### 3.2.3 Regulatory Reporting

##### 3.2.3.1 Description

A partial non-compliance with the PER regulation 35 occurred during the reporting period, with recordable incident reports not submitted on Q3 2019 and Q4 2019.

##### 3.2.3.2 Analysis of Potential environmental harm or Impact

No potential environmental harm or impact, with this partial non-compliance being of administrative nature. Recordable incident reports were provided when recordable incidents had occurred. No recordable incidents had been recorded during the reporting periods.

##### 3.2.3.3 Corrective Actions

The quarterly recordable incident reports will be prepared quarterly, with a task added to the compliance management system to track the delivery of recordable incident summary reports.

### 3.3 Application of Lessons Learned Across Origin's Onshore Interests

Due to the limited nature of activities under this EMP, no lessons learnt have arisen.